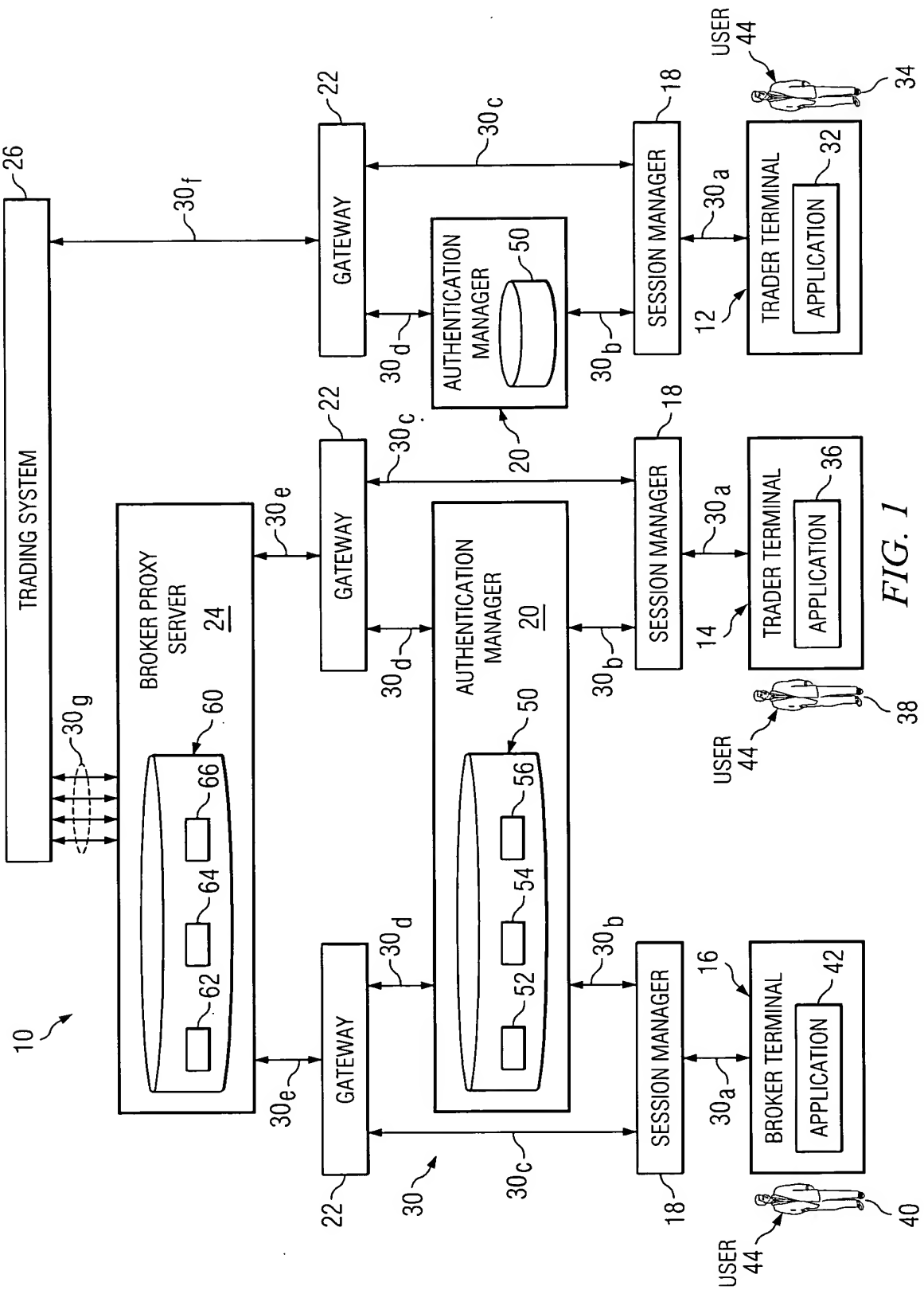
TRADING SYSTEM
26
30_f
GATEWAY
22
30_c
SESSION MANAGER
18
USER
44
34
AUTHENTICATION MANAGER
50
30_d
30_b
30_a
12
TRADER TERMINAL
APPLICATION
32
20
30_e
BROKER PROXY SERVER
24
60
30_g
66
64
62
AUTHENTICATION MANAGER
20
56
54
52
14
36
38
16
BROKER TERMINAL
APPLICATION
42
40
10
30

FIG. 1

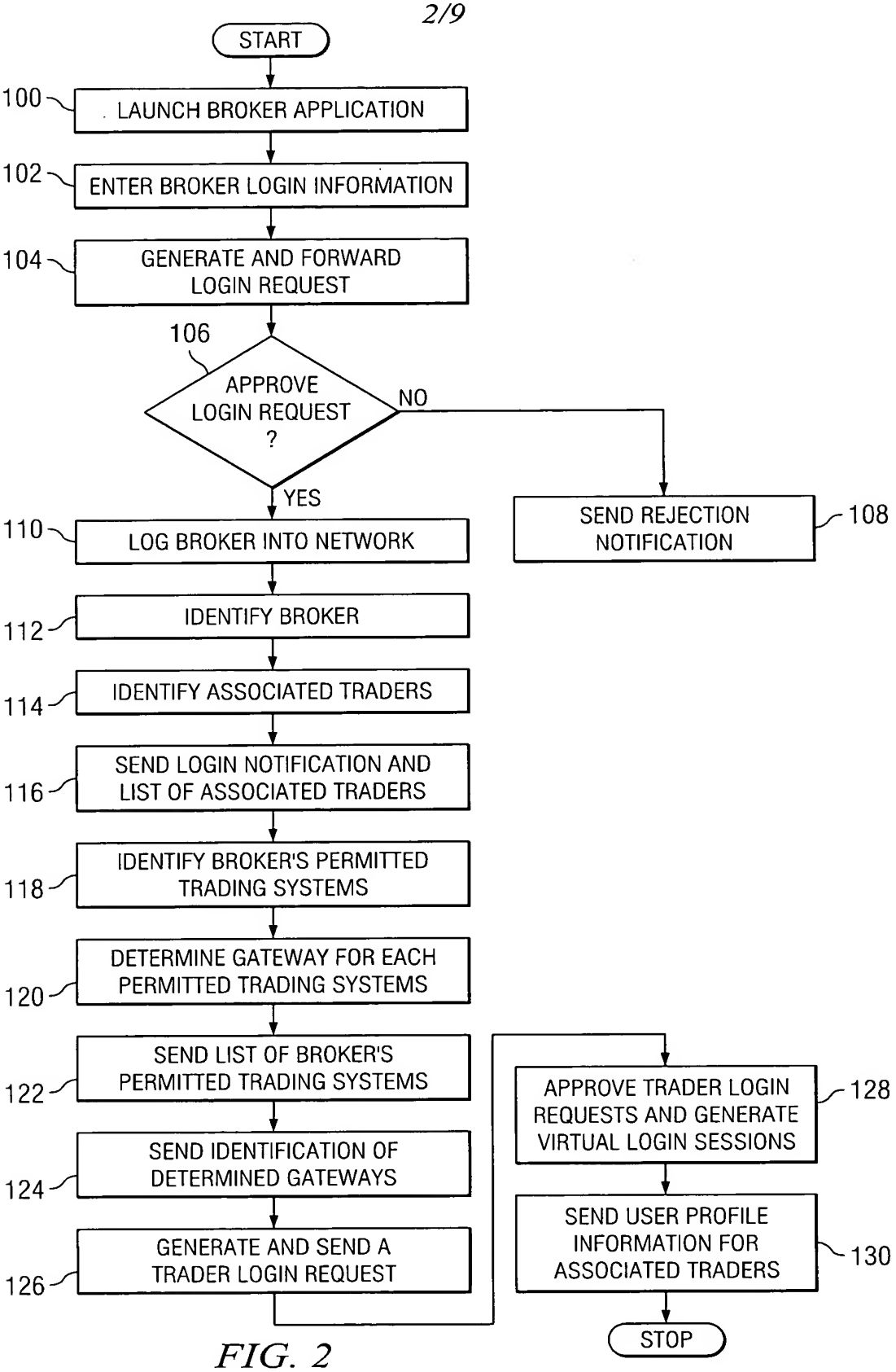
START
100
LAUNCH BROKER APPLICATION
102
ENTER BROKER LOGIN INFORMATION
104
GENERATE AND FORWARD LOGIN REQUEST
106
APPROVE LOGIN REQUEST ?
NO
YES
108
SEND REJECTION NOTIFICATION
110
LOG BROKER INTO NETWORK
112
IDENTIFY BROKER
114
IDENTIFY ASSOCIATED TRADERS
116
SEND LOGIN NOTIFICATION AND LIST OF ASSOCIATED TRADERS
118
IDENTIFY BROKER'S PERMITTED TRADING SYSTEMS
120
DETERMINE GATEWAY FOR EACH PERMITTED TRADING SYSTEMS
122
SEND LIST OF BROKER'S PERMITTED TRADING SYSTEMS
124
SEND IDENTIFICATION OF DETERMINED GATEWAYS
126
GENERATE AND SEND A TRADER LOGIN REQUEST
128
APPROVE TRADER LOGIN REQUESTS AND GENERATE VIRTUAL LOGIN SESSIONS
130
SEND USER PROFILE INFORMATION FOR ASSOCIATED TRADERS
STOP

FIG. 2

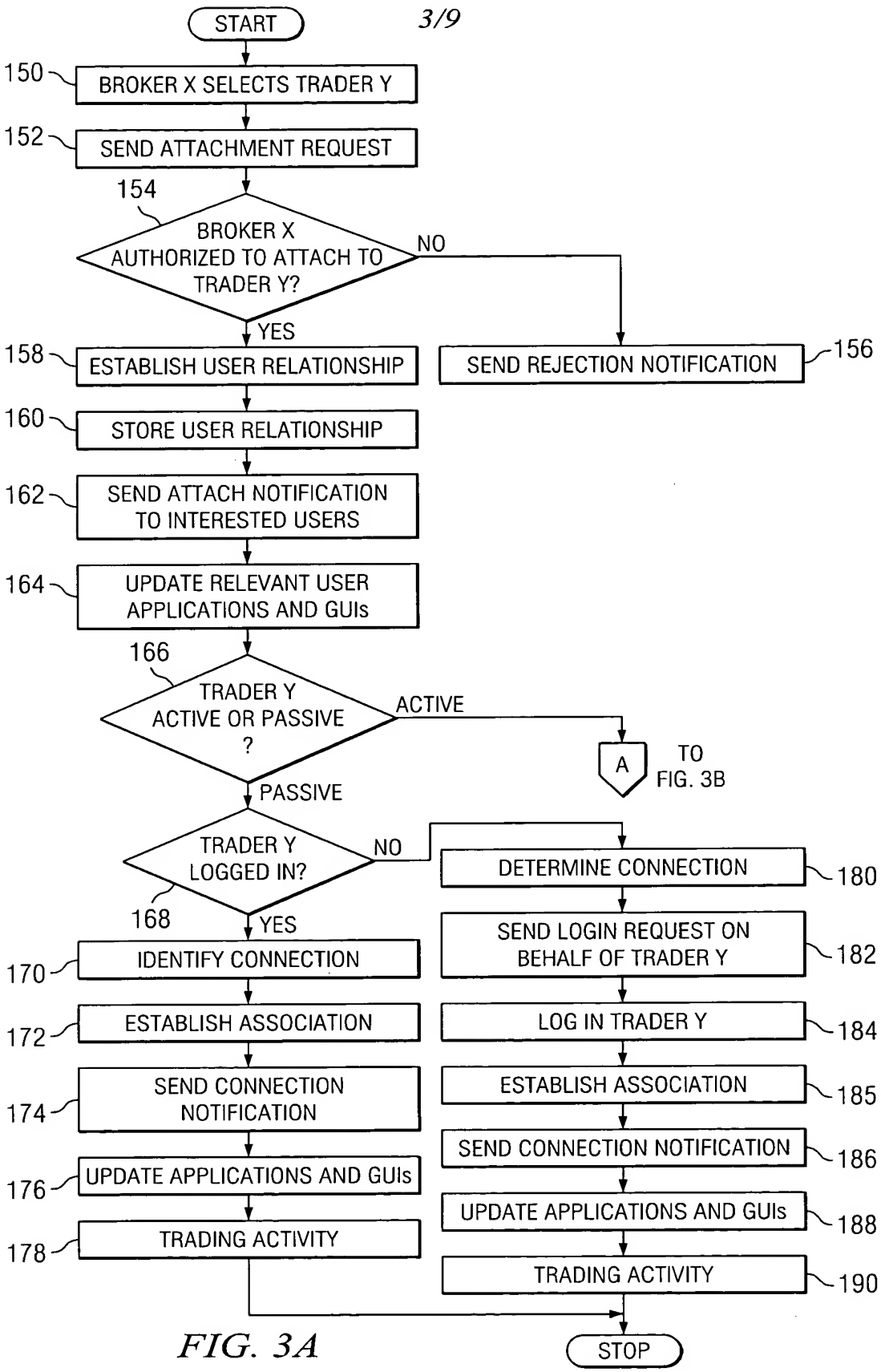
START
150
BROKER X SELECTS TRADER Y
152
SEND ATTACHMENT REQUEST
154
BROKER X AUTHORIZED TO ATTACH TO TRADER Y?
NO
YES
158
ESTABLISH USER RELATIONSHIP
SEND REJECTION NOTIFICATION
156
160
STORE USER RELATIONSHIP
162
SEND ATTACH NOTIFICATION TO INTERESTED USERS
164
UPDATE RELEVANT USER APPLICATIONS AND GUIs
166
TRADER Y ACTIVE OR PASSIVE ?
ACTIVE
A
TO FIG. 3B
PASSIVE
TRADER Y LOGGED IN?
NO
168
YES
DETERMINE CONNECTION
180
SEND LOGIN REQUEST ON BEHALF OF TRADER Y
182
170
IDENTIFY CONNECTION
172
ESTABLISH ASSOCIATION
LOG IN TRADER Y
184
ESTABLISH ASSOCIATION
185
174
SEND CONNECTION NOTIFICATION
SEND CONNECTION NOTIFICATION
186
176
UPDATE APPLICATIONS AND GUIs
UPDATE APPLICATIONS AND GUIs
188
178
TRADING ACTIVITY
TRADING ACTIVITY
190
STOP

FIG. 3A

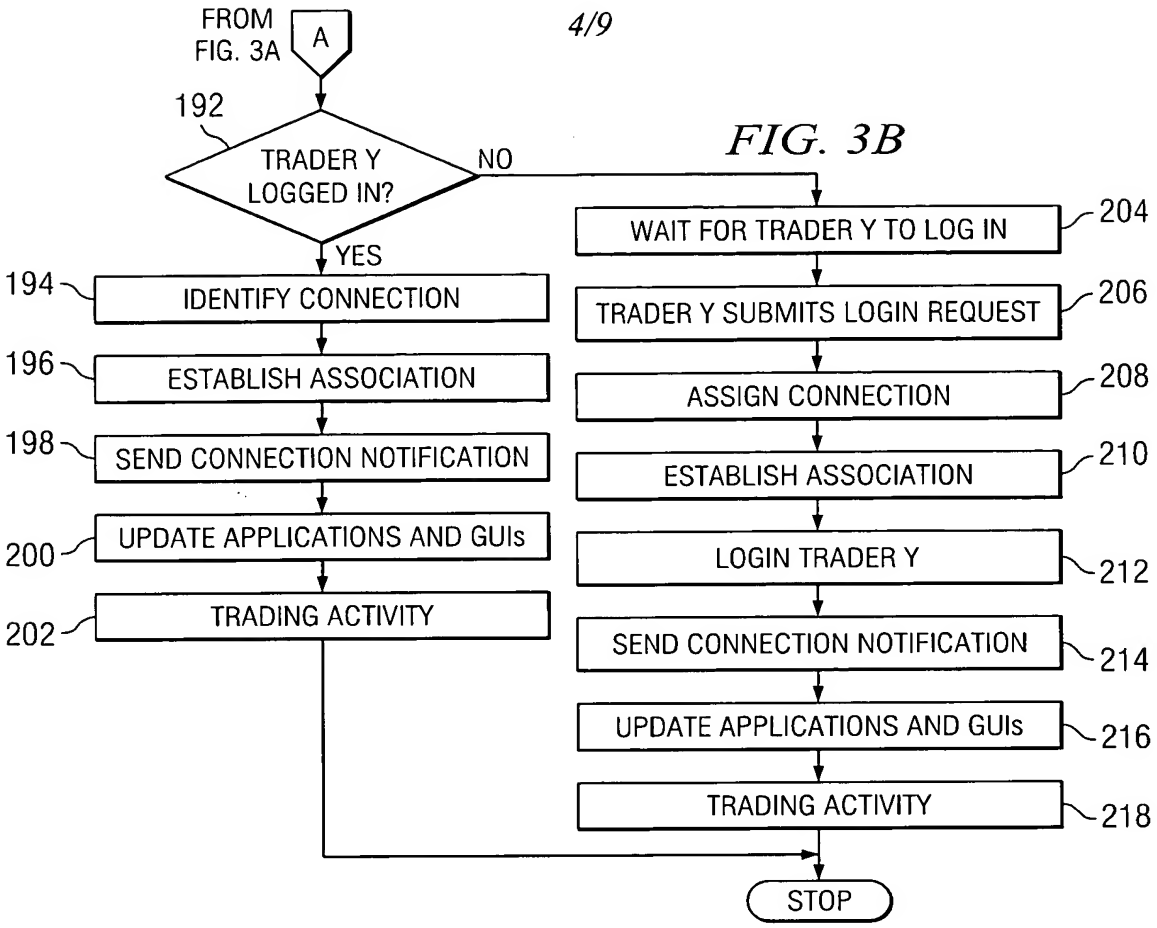
FROM FIG. 3A
A
192
TRADER Y LOGGED IN?
NO
YES
194
IDENTIFY CONNECTION
196
ESTABLISH ASSOCIATION
198
SEND CONNECTION NOTIFICATION
200
UPDATE APPLICATIONS AND GUIs
202
TRADING ACTIVITY
204
WAIT FOR TRADER Y TO LOG IN
206
TRADER Y SUBMITS LOGIN REQUEST
208
ASSIGN CONNECTION
210
ESTABLISH ASSOCIATION
212
LOGIN TRADER Y
214
SEND CONNECTION NOTIFICATION
216
UPDATE APPLICATIONS AND GUIs
218
TRADING ACTIVITY
STOP

FIG. 3B

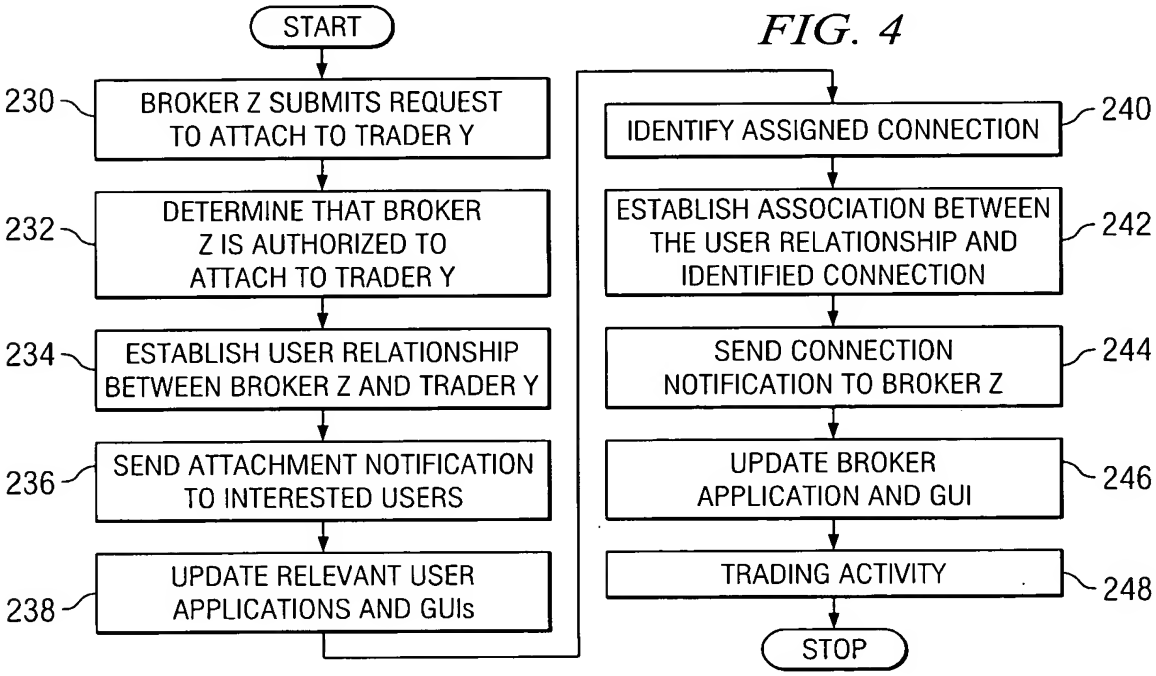
START
230
BROKER Z SUBMITS REQUEST TO ATTACH TO TRADER Y
232
DETERMINE THAT BROKER Z IS AUTHORIZED TO ATTACH TO TRADER Y
234
ESTABLISH USER RELATIONSHIP BETWEEN BROKER Z AND TRADER Y
236
SEND ATTACHMENT NOTIFICATION TO INTERESTED USERS
238
UPDATE RELEVANT USER APPLICATIONS AND GUIs
240
IDENTIFY ASSIGNED CONNECTION
242
ESTABLISH ASSOCIATION BETWEEN THE USER RELATIONSHIP AND IDENTIFIED CONNECTION
244
SEND CONNECTION NOTIFICATION TO BROKER Z
246
UPDATE BROKER APPLICATION AND GUI
248
TRADING ACTIVITY
STOP

FIG. 4

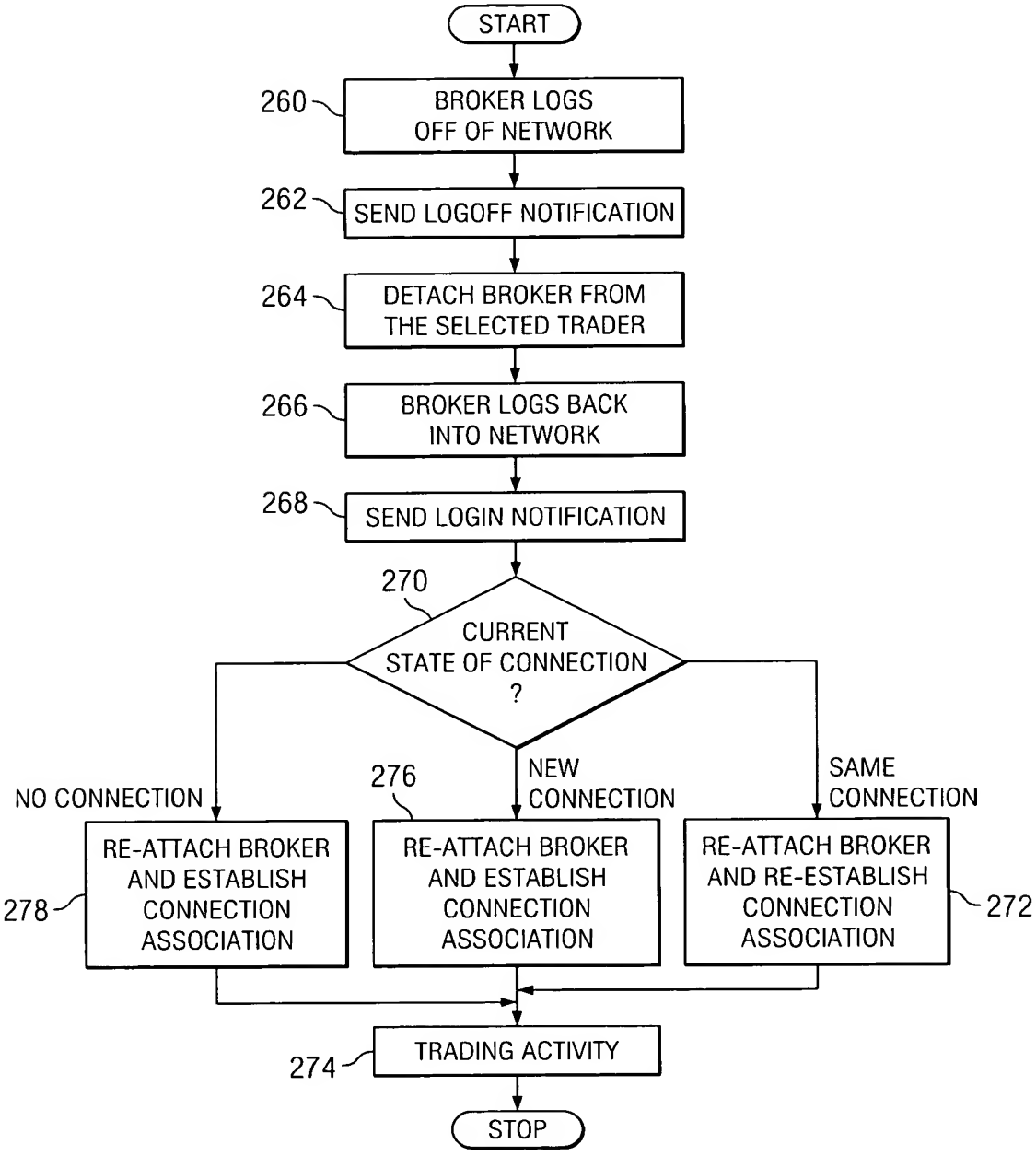
START
260
BROKER LOGS OFF OF NETWORK
262
SEND LOGOFF NOTIFICATION
264
DETACH BROKER FROM THE SELECTED TRADER
266
BROKER LOGS BACK INTO NETWORK
268
SEND LOGIN NOTIFICATION
270
CURRENT STATE OF CONNECTION ?
NO CONNECTION
276
NEW CONNECTION
SAME CONNECTION
278
RE-ATTACH BROKER AND ESTABLISH CONNECTION ASSOCIATION
RE-ATTACH BROKER AND ESTABLISH CONNECTION ASSOCIATION
RE-ATTACH BROKER AND RE-ESTABLISH CONNECTION ASSOCIATION
272
274
TRADING ACTIVITY
STOP

FIG. 5

300

302 USER ID	304 PASSWORD	306 BROKER/ TRADER	308 MANAGED/ UNMANAGED	310 USER RELATIONSHIPS	312 ACTIVE/ PASSIVE	314 PERMITTED TRADING SYSTEMS	316 LOGGED IN?
rjones	hotrod	BROKER	N/A	james02, emilyjohnson, mackey99	N/A	1,2,3,4,6,8	Y
bfsmith	billyboy	BROKER	N/A	james02, mikebrown, mackey99, kjwalters	N/A	1,3,4,5,6,7,8	N
james02	031472	TRADER	MANAGED	rjones, btsmith, williamliles	ACTIVE	3,4,8	N
mikebrown	happytrader	TRADER	MANAGED	btsmith, williamliles	PASSIVE	3,4,6,8	Y
mm3219	smiley74	TRADER	UNMANAGED	N/A	N/A	1,2,3,4,5,6,7,8	Y
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮

FIG. 6

330

332 TRADER ID	334 MANAGED/ UNMANAGED	336 ACTIVE/ PASSIVE	338 LOGGED IN TO NETWORK	340 CONNECTED TO TRADING SYSTEM	342 CONNECTION	344 ATTACHED BROKERS	346 BROKER GATEWAYS
james82	MANAGED	PASSIVE	N	Y	335	rjones	A13
						tdwinston	A22
						benjamin22	A8
kellypatrick	UNMANAGED	N/A	Y	N	281	N/A	N/A
mikebrown	MANAGED	ACTIVE	N	N	N/A	tdwinston	A22
						benjamin22	A8
jbriley	MANAGED	ACTIVE	Y	Y	175	rjones	A13
						benjamin22	A8
						frankscott	A15
. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .

FIG. 7

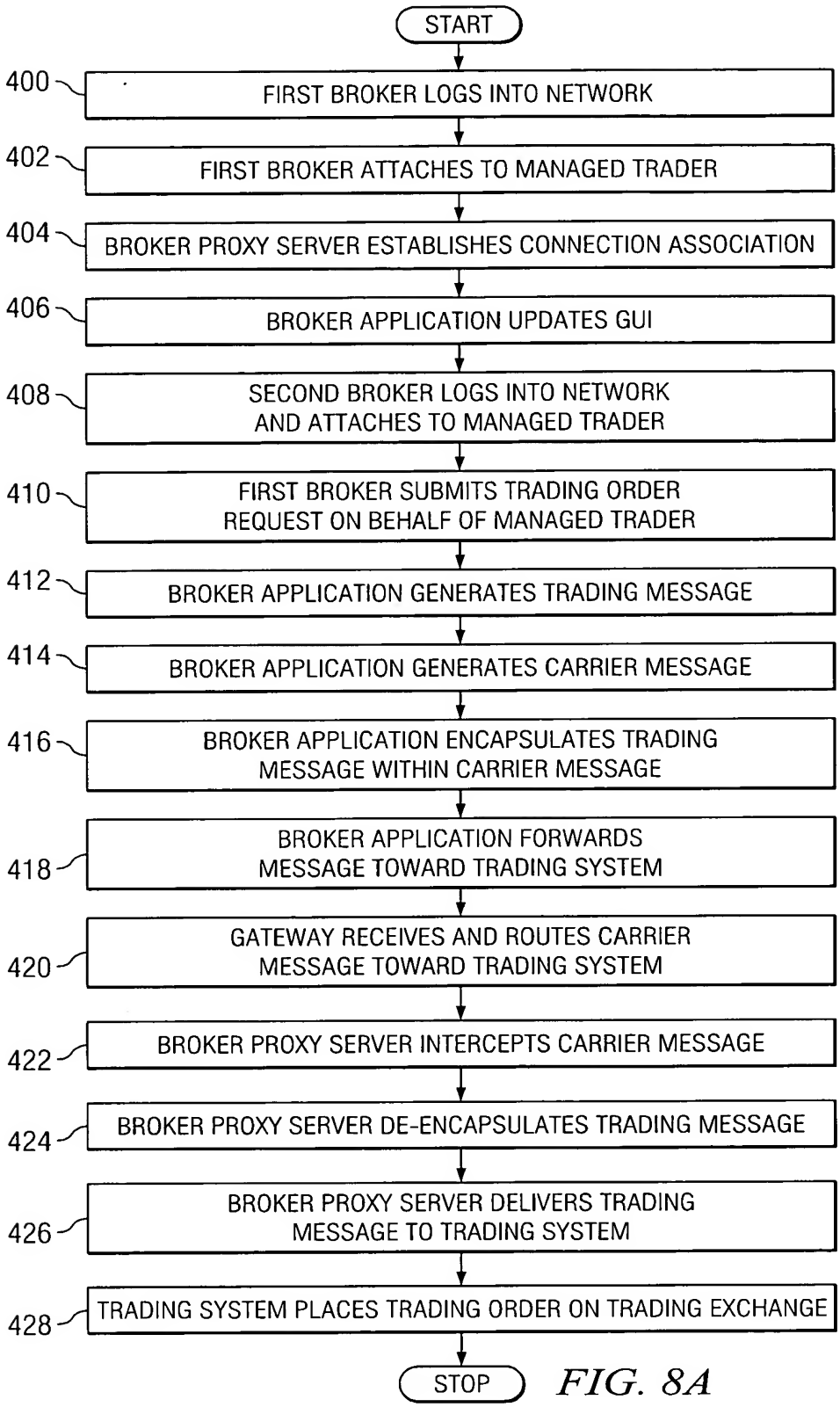
START
400
FIRST BROKER LOGS INTO NETWORK
402
FIRST BROKER ATTACHES TO MANAGED TRADER
404
BROKER PROXY SERVER ESTABLISHES CONNECTION ASSOCIATION
406
BROKER APPLICATION UPDATES GUI
408
SECOND BROKER LOGS INTO NETWORK AND ATTACHES TO MANAGED TRADER
410
FIRST BROKER SUBMITS TRADING ORDER REQUEST ON BEHALF OF MANAGED TRADER
412
BROKER APPLICATION GENERATES TRADING MESSAGE
414
BROKER APPLICATION GENERATES CARRIER MESSAGE
416
BROKER APPLICATION ENCAPSULATES TRADING MESSAGE WITHIN CARRIER MESSAGE
418
BROKER APPLICATION FORWARDS MESSAGE TOWARD TRADING SYSTEM
420
GATEWAY RECEIVES AND ROUTES CARRIER MESSAGE TOWARD TRADING SYSTEM
422
BROKER PROXY SERVER INTERCEPTS CARRIER MESSAGE
424
BROKER PROXY SERVER DE-ENCAPSULATES TRADING MESSAGE
426
BROKER PROXY SERVER DELIVERS TRADING MESSAGE TO TRADING SYSTEM
428
TRADING SYSTEM PLACES TRADING ORDER ON TRADING EXCHANGE
STOP

FIG. 8A

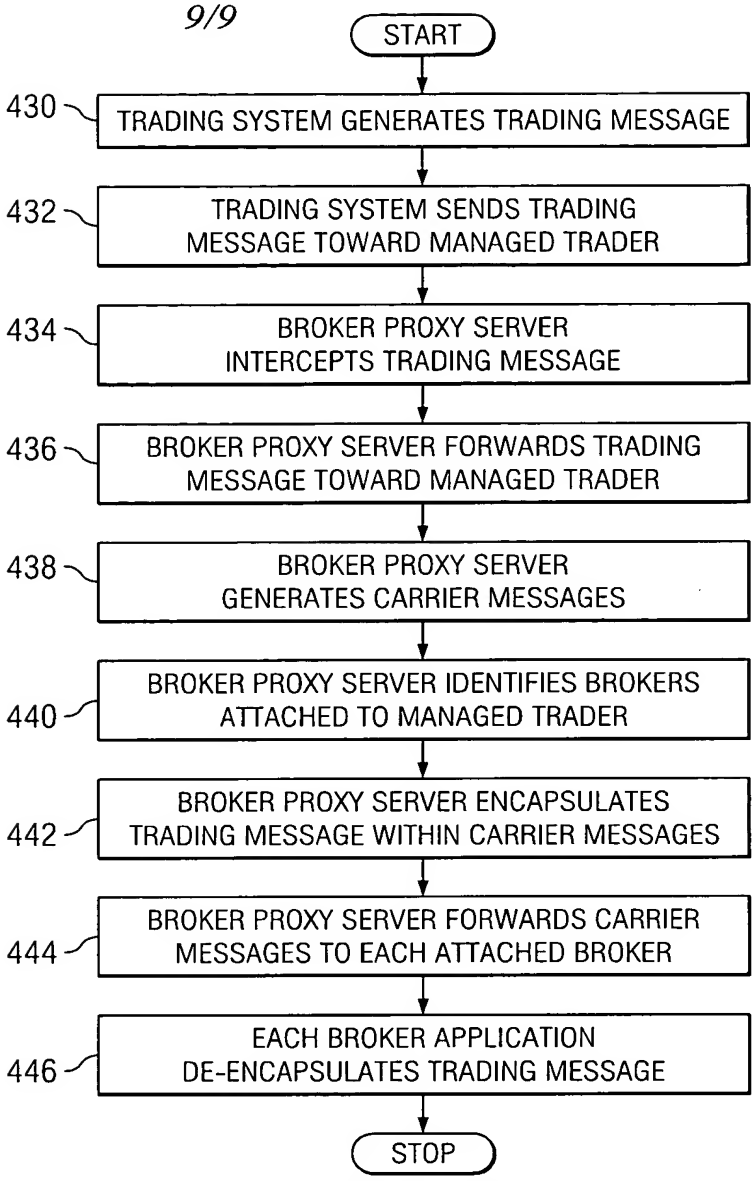
START
430
TRADING SYSTEM GENERATES TRADING MESSAGE
432
TRADING SYSTEM SENDS TRADING MESSAGE TOWARD MANAGED TRADER
434
BROKER PROXY SERVER INTERCEPTS TRADING MESSAGE
436
BROKER PROXY SERVER FORWARDS TRADING MESSAGE TOWARD MANAGED TRADER
438
BROKER PROXY SERVER GENERATES CARRIER MESSAGES
440
BROKER PROXY SERVER IDENTIFIES BROKERS ATTACHED TO MANAGED TRADER
442
BROKER PROXY SERVER ENCAPSULATES TRADING MESSAGE WITHIN CARRIER MESSAGES
444
BROKER PROXY SERVER FORWARDS CARRIER MESSAGES TO EACH ATTACHED BROKER
446
EACH BROKER APPLICATION DE-ENCAPSULATES TRADING MESSAGE
STOP

FIG. 8B

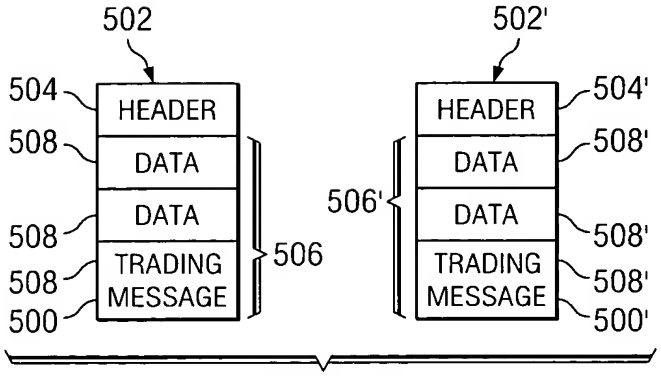
502
504
HEADER
508
DATA
508
DATA
508
TRADING MESSAGE
500
506
502'
HEADER
504'
DATA
508'
506'
DATA
508'
TRADING MESSAGE
508'
500'

FIG. 9